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ET
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VOLUME XXXVI

A SHORT ACCOUNT OF THE STATISTICS
OF THE
SEA FISHERIES OF ENGLAND AND WALES

BY

T. EDSER

STATISTICAL OFFICER, FISHERIES DEPARTMENT
MINISTRY OF AGRICULTURE AND FISHERIES

EN COMMISSION CHEZ
ANDR. FRED. HØST & FILS
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Historical.

The collection of commercial statistics of the sea fisheries of England and Wales was first undertaken in 1886. It was then confined to a record of the daily quantity and value of each of 16 kinds of fish landed at some 135 landing places which included all the principal fishing ports. With minor alterations this system continued until 1906, but during the early years of the present century, experiments were made with a view to obtaining data as to the place of capture and the time expended by the larger vessels. As a result of these experiments, the collecting system was considerably improved and extended, and in 1906 entered upon a new era.

In that year the number of kinds of fish distinguished was increased, and particulars of the grounds visited, and the number of days absence from port (counting the day of departure and of arrival as one day) were obtained for practically every voyage made by each first class * trawler and liner with the exception of trawlers fishing in fleets. For the fleets the daily particulars of the quantities despatched by the carriers, the number of vessels that sent their catch, and the particulars of fishing ground were obtained. In addition the place of capture, the number of landings and the quantity landed, each day, at each fishing station, were secured in respect of all drifters. In both these sets of returns steam vessels were distinguished from sailing. The daily quantities of each kind of fish landed by all second and third class vessels other than drifters were also obtained.

This frame work has remained to the present day, but additions have been made to it from time to time. Some were necessitated by changes in fishing methods such for example as the differentiation of motor vessels in 1912, and of Danish seining as a separate method of fishing in 1921, but the chief extension has been in the direction of obtaining a more exact measure of catch per unit of time than is afforded by the average catch per day's absence from port. Before the War an experiment had been tried, with certain selected skippers, to ascertain how far it was possible to relate the catch of trawlers to the time actually spent in fishing, and in 1913 about 10 per cent. of the North Sea trawling was treated in this manner.

* i. e. 15 tons and over.

As a result of this experiment it was decided in 1920 to try to obtain the information from as many vessels as possible, and in that year the number of hours during which the trawl or Danish Seine was actually in use was obtained for a considerable proportion of the voyages. This proportion was increased in the following years until in 1923 the particulars were available for over 90 per cent. of the voyages. Additions have also been made from time to time to the number of fishing stations which now total 184, while the number of separate kinds of fish distinguished has risen to 50.

In 1903 cod, haddock and plaice were expanded to include the "Trade categories" (large, medium, small) at ports where these fish are sorted before sale; similar particulars for hake and soles have been available from 1908, and for brill, turbot, halibut, lemon soles, megrims and witches from 1923.

All the above returns relate to fish of British taking. Landings by foreign fishing vessels, direct from the grounds, have been recorded for many years by the Customs Department, as a part of the general trade returns of the country. The particulars have been published for the United Kingdom as a whole in the "Annual Statement of the Trade of the United Kingdom". Only a few kinds of fish are, however, distinguished in these returns and particulars of method and place of capture are outside their scope. In order to obtain fuller information than was obtained by the Customs Department the Ministry extended its machinery to include these landings and from 1922 practically the same particulars are available for them as for British landings.

Method of obtaining the Statistics.

Besides the necessary note books and forms, each Collector is furnished with printed "Instructions" which, in order to ensure as much uniformity as possible, give exact directions regarding all aspects of the statistics which are not affected by purely local conditions. But, as regards the exact method of obtaining the particulars, it is not possible to be so precise. Market procedure varies from port to port, and owners and others concerned are under no legal obligation to supply information. The Collector is therefore instructed to obtain, as far as possible, the particulars required from the skippers, or mates at the time of landing or from the owners or salesmen, and to use such information to supplement that obtained by personal observation at the market and quay.

In general, but subject to many modifications, the actual procedure for obtaining the particulars at the larger ports may be stated as follows:—

The Collector attends at the market place some time before the fish is sold, in order to obtain the details of each vessel's catch. These he enters in his note

book in terms of the market weights or measures, chiefly from actual counting of the packages as they lie on the market ready for sale, but also from information supplied by the mate of the vessel, from whom he also ascertains the grounds visited, the days absence, and the time occupied in fishing.

The quantities in terms of the market denominations are converted to cwts. by means of factors which have been prepared by actually weighing the contents of sample packages and which are checked from time to time by fresh weighings. These factors have to be used with considerable discretion as the packing of the receptacles is distincly variable, and the weight of the same sized package will tend to be heavier in times of glut than in times of scarcity. It is a curious fact that scarcely any of our larger ports use weighing machines to ascertain the actual weight of fish landed on the quay, and practically all sales are based on more or less accurate estimates of the weight of the parcels.

From his note book the Collector transfers the details to the appropriate return form (Form D.) using one for each 1st Class trawler, liner or Danish seiner, and a total of the quantities so entered is obtained by folding the forms and placing them one on another, leaving only the figures on each form exposed for casting. To this total are added (a) the quantities landed by Drift vessels which are entered also upon a special form (Form C.) showing the daily number of landings and quantity landed by each class of vessel and the fishing grounds visited, and (b) any quantities landed by any other methods of fishing.

The Collector has also to ascertain the value realised by the sale of the fish. Where possible he notes, either by observation at the actual sales or from other sources which may be open to him, the prices realised by each parcel of fish as it is sold. He then weights the prices by the quantities sold, and so obtains the total value and average value for the day. In some ports, however (and these are generally the larger ones), it is customary for several salesmen to be selling simultaneously and the collecting staff cannot possibly attend every sale. In such cases they attend as many sales as possible, and note down every price at which each kind of fish is sold. An arithmetic mean of all the entries for each kind of fish is calculated and used as the average price for that day.

He then enters on another form (Form A.) the total quantity of each kind landed during the day with the average price and total value realised.

The above applies to all landings from British vessels. For each foreign vessel landing direct from the fishing grounds the Collector enters up a form (J) very similar to the D. form. Some of the information contained thereon must, under the Customs Acts, be supplied to H. M. Customs, but the bulk of the data falls to be obtained by the Collector in a similar manner to that for British vessels. These landings are kept strictly separate from the British and are not included in the daily totals recorded on Form A.

Scheme of Tabulation.

Before 1903 the only tabulation attempted was by coasts, the monthly quantities at each port being added together for the year and totals for the East, South and West Coasts prepared. In 1903 the North Sea was separately shewn for the first time, and in 1906 very considerable changes were made. The fishing grounds were divided up into broad regions and the North Sea further subdivided into Areas by depth, the portion with a depth up to 20 metres (11 fathoms) being called A; that between 20 metres and 40 metres B; 40—60 metres C; 60—80 metres D; 80—100 metres E; 100—200 metres F; and over 200 metres G. Further, by lines fixed arbitrarily, but with some regard to natural divisions, these areas were subdivided into smaller sections. Charts showing the North Sea so divided were published in each of the Annual Reports on Sea Fisheries for the years 1906—1913.

Tabulation of quantities and days absence was effected for all these subdivisions, and the catch per days absence worked out for Steam, Sailing and Motor Trawlers and Liners, i. e. for all the "demersal" catching types of vessels of the first class. The "pelagic" fish (i. e. Herrings, Mackerel, Pilchards and Sprats) which are mainly taken by drift nets, seine nets, hand lines, sprat trawls and keddle nets, were tabulated monthly by each method of fishing and each class of fishing vessel and, in addition, the quantity of each kind of pelagic fish taken in rectangles of $^1/_2{}^\circ$ lat. by $^1/_2{}^\circ$ long. was obtained. This system remained in force until the end of 1919 except that for the years 1916 to 1918 war conditions made tabulation of the "demersal" particulars by regions and depth areas impracticable.

In 1919 it was decided to abandon the division of regions into depth areas because it was found that, whilst emminently suitable for the study of the few fish whose distribution is correlated with depth of water, the unwieldy and irregular shapes of the areas prevented them being as useful as was desired in the case of more freely moving fish. From the beginning of 1920 therefore a new system of division was adopted, and all fishing regions were divided up into rectangles of one degree of longitude by $^1/_2$ degrees of Latitude, and catches were located as far as possible into these rectangles. It does not always follow that the whole of the fish taken upon a trip has been caught within a single rectangle, but generally the greater part of it has, and no serious harm is done in these cases by regarding the whole amount as coming from the rectangle that provided most of it.

At the same time, as it was felt that the record of the quantity of fish taken during, say, 100 hours actual fishing, would give a much better indication of the available supplies on the ground than the catch per day's absence, it was decided to obtain from the fishermen, as far as possible, details of the number of hours actually spent with the fishing gear in use each trip.

At first there was considerable difficulty in obtaining precise details both of actual grounds fished and also of hours fishing, but by degrees the information

has been forthcoming from more and more vessels, and it is hoped that as its importance becomes more widely known every vessel will furnish accurate particulars, especially as the details are treated with absolute secrecy, and nothing is divulged or published which might give competitors any advantage that they could not otherwise obtain.

In 1924 some slight alteration of the boundaries of the fishing regions were made in order to bring them into agreement with a scheme of regions decided upon by the International Council for the Exploration of the Sea. These regions are shown divided into the statistical rectangles in the appendix, each rectangle being known by the combination of the letter at the top and the number at the left side of the chart. The only amendment that to any extent interferes with the continuity of the older regions is the extension of the "North Sea" to 62° N. Lat. and 4° W. Long., thus taking in the bulk of the old region "North of Scotland".

Publication of Results.

A printed statement "The Monthly Return of Sea Fisheries" giving preliminary figures is issued free of charge about the middle of the month following that to which the figures relate. It gives for fish of British taking the quantity and value of each kind landed in England and Wales as a whole, and the quantity of each kind and the total value of the landings at each of 21 of the larger ports together with the total quantity and value landed in Scotland and in Great Britain. In addition the imports of fresh fish (quantity and value) distinguished the amounts received direct from the fishing grounds and from certain of the principal consigning countries, are shown for Great Britain as a whole and, as regards landings direct from the grounds, for each of the principal ports of England and Wales.

An annual publication, "Sea Fisheries, — Statistical Tables", gives figures for the year for each kind of fish at each fishing station, the quantities of each kind secured by each class of vessel and from each fishing region by each method of fishing, together with the number of fishing vessels and fishermen, and particulars of the imports and exports of fish and fish products. This volume is published about May of the following year and is priced at from 4/- to 6/-. Owing to the high cost of printing, it has not been possible to include a great deal of information of considerable interest and value to those who have the welfare of the fisheries at heart; arrangements have therefore been made to place the detailed records, so far as they do not divulge any information which should be regarded as confidential, at the disposal of enquirers at the Ministry's Office, 43, Parliament Street, London, S.W. 1. For a small charge to cover expenses copies of, or extracts from, any of these records can be supplied.

Degree of Reliability of the Statistics.

(a) Scope of the Statistics. In addition to the fishing ports at which statistics of the landings are collected, there are a number of places at which a few families wholly or partially support themselves by fishing; and at many places round the coast amateurs catch small quantities of sea fish. With these exceptions, and they are believed to be quite unimportant, probably not amounting in aggregate to even one tenth of one per cent of the total, the collection takes cognisance of all sea fish landed for the first time in England and Wales.

(b) Quantities. The collectors are required to estimate the weight of each kind of fish to the nearest $^1/_4$ cwt. but at the larger ports where individual catches may amount to many tons, it is generally sufficient to work to the nearest whole cwt. except as regards the rarer and more highly priced fish (brill, soles, turbot, etc.). At stations where the Collectors are employed solely on collecting work they are in a position to see practically all the fish landed, and can form quite reliable estimates within the limits set out above. But at the smaller stations where part-time Collectors are employed it is possible that the figures are not always quite so accurate.

(c) Values. Where the actual sale prices can be weighted by the quantities sold the value figures are accurate, but at the large ports where an arithmetic mean is employed there is risk of error. On several occasions however, the actual grossings of some of the vessels have been compared with the total values, as determined by the means, and the errors found have not exceeded 3 per cent. for individual boats. It may therefore reasonably be expected that the error in the totals of all boats would be of a still smaller magnitude.

(d) Days absence. In calculating this it has been assumed that the two broken periods, i. e. the day of departure and that of arrival, would together equal one day. The possible variation of the total of these periods is from practically nothing up to 2 full days and this variation may become serious when dealing with very short voyages. As, however, most of the 1st Class bottom fishing vessels are absent for at least a week the possible error is of the order of 10 to 15 per cent., but the probable error is hardly more than 2 per cent.

(e) Number of hours actually fishing. It is very difficult to estimate the error in this item. On some vessels the engineer's log gives very precise details extending to minutes, but in others this is not done and we are dependent upon a special record, or sometimes, even upon the recollection of the crew, for the number of hauls and their actual or average duration. It is clear therefore that the records may be absolutely correct or may contain errors up to about 20 per cent. in extreme cases. On balance it is probable that the error would be within the range of 0 to 5 per cent.

(f) Fishing grounds. This is admittedly sometimes a difficult detail to ascertain. It is a fact that in the event of a lucky strike of fish it is to the fishermen's interest to keep the exact locality secret with a view to further exploitation. In these cases, however, the Collectors endeavour to ascertain the rectangle fished and as a rectangle covers a fairly large area they are generally successful. Another difficulty is the voyage that has extended to more than one ground sometimes quite distant from one another. In these cases unless the catch from one of them amounts to 70 per cent. of the total the whole catch is treated as not referable to a particular rectangle. There is also a certain amount of indifference and even antagonism on the part of the fishermen, and the collector is sometimes given entirely false particulars. Fortunately fish from different localities have physical characteristics which to a certain extent betray their place of origin, and the collectors are thus enabled to discover and correct any gross mis-statement of the place of capture.

It is impossible to give any definite idea of the extent to which wrong grounds are given, but from the results of tabulation of the returns into rectangles it is obvious that the distribution of the different species is subject to seasonal changes which are indicated by these figures with a remarkable degree of uniformity from year to year.

As regards the proportion of the total catch for which grounds are given it is possible to be much more precise. In 1923 the region was determined in respect of 97 per cent. of the quantity of wet fish taken by the demersal catching types and the rectangle in respect of 82 per cent. In the case of the pelagic catch which is secured from relatively few rectangles and almost entirely from home waters the quantity which could not be allocated to a particular region or rectangle was negligible.

Forms in use & the numbers returned.

In 1923 the following numbers of returns were received:—

Form A. Daily quantity and value and monthly total of each kind of fish landed at each station 15,464
See page 11.

Form C. Daily quantity and monthly total of each kind of pelagic fish landed by each class of vessel and each method of fishing at each station 1,292
See page 12.

Form D. Record of each landing by 1st class steam sailing or motor trawler, liner or Danish seiner 70,956
See page 13.

Form E. Record of each landing by cutters from the fleets 570
See page 14.
Form J. Record of each landing by foreign fishing vessel direct from the fishing grounds 2,333
See page 15.

Typical Result of Analysis of Returns into Statistical Rectangles.

The 5 charts of the North Sea (see pages 16 to 20) illustrate one of the uses to which the figures for statistical rectangles can be put. In them the average catch of all fish (in cwts.) by steam trawlers per 100 hours actual fishing time for each of the years 1913 and 1920 to 1923 is shown for each rectangle in which fishing took place. It must be remembered that 1913 is based upon a very small sample, only about 10 per cent of the total, but it is of value as an indication of the pre-war condition of the North Sea. The post-war years are based upon much higher samples ranging from 60—90 per cent. of the total. Another fact which must be borne in mind is that in 1923, the figures relate to the combined fleets of England and Scotland whereas all the others are for the English fleet alone.

Each rectangle is named by the letter and number which appear around the frame directly to the North and South and East and West, and it will be noticed that the lowest catch in 1920 was in J 3, 1921 in H 3, 1922 in G 4, and 1923 in H 2. It would therefore appear that the part of the North Sea carrying the smallest amount of sizeable bottom fish is in the South near the Dutch coast and that as we move seaward from this area in any direction, the catches increase with fair regularity, and reach their maximum in the extreme North. Further it will be noticed that there has been a steady decrease generally in the figures since 1920 and by means of contour lines for catches of 1,2 and 3 cwts. per 1 hours fishing the trend from year to year is made apparent.

In 1913 the Southern Bight and deep water east of the Dogger yielded less than 1 cwt. per hour but in 1920 the corresponding area had shrunk to a strip from East Anglia to Holland. During the next 3 years there was a continuous extension of the area until in 1923 it embraced the whole of the region South of a line from the Tyne to Horn Reef. In a similar manner these changes will be found reflected in the contours for 2 and 3 cwts. per hours fishing.

By means of similar charts for individual species examined monthly as well as annually much further light can be thrown on these variations, but space does not permit of such examination here.

Form. A.

Name of Station _____ *Name of Fish* _____

Month _____ *Trade Category* _____

Date	Quantity landed: Number or Cwts.*	qrs.	lbs.	Aver. value per† ..... s.	d.	Total value £	s.	d.
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
Carried forward								

Date	Quantity landed: Number or Cwts.*	qrs.	lbs.	Aver. value per† ..... s.	d.	Total value £	s.	d.
Brought forward								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
Total								

Signature of Collector _____

This space is not to be used.

* Strike out the words that do not apply. † State unit.

Ministry of Agriculture and Fisheries.

C.

Return of Herrings, Mackerel, Pilchards or Sprats landed at the Fishing Station of _____

Kind of Fish *(Note a)*_____ **Mode of Capture** *(Note b)* _____

Date of Landing	**Steam** Vessels (not including Motor Vessels)				Vessels propelled entirely or partially by **Motor**				All Other Vessels						Total Quantity Landed	Place of Capture (A separate line should be used for each day's catch from each locality)	
	1st Class		2nd Class		1st Class		2nd Class *(Note c)*		1st Class		2nd Class		3rd Class			Region and Rectangle	Name of Locality (whether rectangle can be given or not)
	No. of Landings	Quantity Landed	No. of Landings	Quantity Landed	No. of Landings	Quantity Landed	No. of Landings	Quantity Landed	No. of Landings	Quantity Landed	No. of Landings	Quantity Landed	No. of Landings	Quantity Landed			
192...		cwts.		cwts.		cwts.		cwts.		cwts.		cwts.		cwts.	cwts.		

Note (*a*)—A separate form should be used for Herrings, Mackerel, Pilchards and Sprats respectively.

(*b*)—A separate form should be used for drift nets, long haul seines (or draft nets), seines used with tuck nets, stow nets, lines, trawls, etc., respectively.

Note (*c*)—Vessels of any size less than 15 tons become 2nd Class if they have motor power.

Ministry of Agriculture and Fisheries. D.

Port

Date of Arrival — Name of Vessel

Date of Landing — Port Letter and Number

Method of Propulsion and Capture

Particulars of Fishing Grounds	Depth	Latitude	Longitude	Rectangle
	Fathoms	Bearings		

No. of Hauls	
No. of Hours Fishing	
Average Duration of Haul	
No. of Days Absent on Voyage	
Brill, Large	Cwts.
Small	
Unsorted	
Soles, Large	
Medium	
Small	
Unsorted	
Turbot, Large	
Small	
Unsorted	
Bream	
Catfish	
Coalfish	
Cod, Large	
Medium	
Small	
Unsorted	
Conger Eels	
Dabs	
Dogfish	
Dory	
Flounders or Flukes	
Gurnards	
Haddock, Large	
Medium	
Small	
Unsorted	
Hake, Large	
Medium	
Small	
Unsorted	
Carried forward	

Brought forward	Cwts.
Halibut, Large	
Medium	
Small	
Unsorted	
Latchets (Tubs)	
Lemon Soles, Large	
Small	
Unsorted	
Ling	
Megrims, Large	
Small	
Unsorted	
Monks or Anglers	
Mullet, Red	
Plaice, Large	
Medium	
Small	
Unsorted	
Pollack	
Skates and Rays	
Torsk (Tusk)	
Whiting	
Witches, Large	
Small	
Unsorted	
Livers	
Roes	
All other (Except Herrings, Mackerel, and Shellfish)	
Herrings	
Mackerel	
Total Wet Fish	
Shellfish—Crabs	No.
Lobsters	
Oysters	
Norway Lobsters	Cwts.
Escallops and Queens	
Whelks	

Ministry of Agriculture and Fisheries. E.

Return of fish from _____ **Fleet**

landed of Billingsgate Market, London, by Steam Carrier _____

on _____ **192**

	No. of Fish or No. of Boxes (state which)	Total Equivalent Weight	Value
		cwt.	£
Brill — Large			
Brill — Small			
Brill — Size not distinguished			
Soles — Large			
Soles — Medium			
Soles — Small			
Soles — Size not distinguished			
Turbot — Large			
Turbot — Small			
Turbot — Size not distinguished			
Bream			
Catfish			
Coalfish			
Cod — Large			
Cod — Medium			
Cod — Small			
Cod — Size not distinguished			
Conger Eels			
Dabs			
Dog Fish			
Dory			
Flounders or Flukes			
Gurnards			
Haddock — Large			
Haddock — Medium			
Haddock — Small			
Haddock — Size not distinguished			
Hake — Large			
Hake — Medium			
Hake — Small			
Hake — Size not distinguished			
Halibut — Large			
Halibut — Medium			
Halibut — Small			
Halibut — Size not distinguished			
Latchets (Tubs)			
Lemon Soles — Large			
Lemon Soles — Small			
Lemon Soles — Size not distinguished			
Ling			
Megrims — Large			
Megrims — Small			
Megrims — Size not distinguished			
Monks or Anglers			
Mullet, Red			
Plaice — Large			
Plaice — Medium			
Plaice — Small			
Plaice — Size not distinguished			
Pollack			
Skates and Rays			
Torsk (Tusk)			
Whiting			
Witches — Large			
Witches — Small			
Witches — Size not distinguished			
Herrings			
Mackerel			
Livers			
Roes			
All other Wet Fish			
Total Wet Fish			
Shell Fish (state kind):—			

Position of Fleet, Lat. and Long. or Bearings _____

No. of Vessels with the Fleet _____ No. of Vessels which boarded Fish _____

Date of Boarding _____ *Signed* _____

Manager of Fleet.

Date _____

One of these forms should be made out for each carrier bringing fish from the Fleet.

Ministry of Agriculture and Fisheries. J.

Return of Fish landed by a Foreign Vessel.

Quantities to be entered to the nearest quarter cwt. and values to the nearest 5s.

	Quantity	Value £	Value s.
	cwts.		
I. Wet Fish—			
Brill			
Soles — Large			
Soles — Medium			
Soles — Small			
Soles — Unsorted			
Turbot			
Bream			
Catfish			
Coalfish			
Cod — Large			
Cod — Medium			
Cod — Small			
Cod — Unsorted			
Conger Eels			
Dabs			
Dogfish			
Dory			
Flounders or Flukes			
Gurnards			
Haddock — Large			
Haddock — Medium			
Haddock — Small			
Haddock — Unsorted			
Hake — Large			
Hake — Medium			
Hake — Small			
Hake — Unsorted			
Halibut			
Latchets (Tubs)			
Lemon Soles			
Ling			
Megrims			
Monks (or Anglers)			
Mullet, Red			
Plaice — Large			
Plaice — Medium			
Plaice — Small			
Plaice — Unsorted			
Pollack			
Skates and Rays			
Torsk (Tusk)			
Whiting			
Witches			
Herring			
Mackerel			
Mullet, Grey			
Pilchards			
Sprats			
Whitebait			
Salmon			
Sea-Trout			
Livers of Fish			
Roes of Fish			
All other Wet Fish			
Total Wet Fish			
	No.		
II. Shell Fish—			
Crabs			
Crayfish			
Lobsters			
Oysters—			
A Native			
B Deep Sea			
C Foreign (previously laid down)			
	cwts.		
Other Shell Fish			
Norway Lobsters			
Prawns			
Shrimps			
Cockles			
Escall. and Queens			
Mussels			
Periwinkles			
Whelks			
Total Value			

Fishing Station at which fish was landed—

Name of Vessel—

Nationality—

Port Letter and Number—

Tonnage—

Method of Fishing—

Method of propulsion—

Date of commencement of Voyage—

Date of arrival—

Date of Landing—

Number of days absent—

Position of fishing grounds. Bearings—

Latitude—

Longitude—

Depth at which Trawl was shot—

_____ fathoms

Not to be filled in

Region—

Rectangle—

Class of Vessel—

Signature of Master

_____

Chart I. Catch in cwts. of bottom fish per 100 hours actual fishing by Steam Trawlers in each rectangle of the North Sea in 1913.

Approximate position of { 1 cwt. per hour's fishing
2 " " " "
3 " " " "

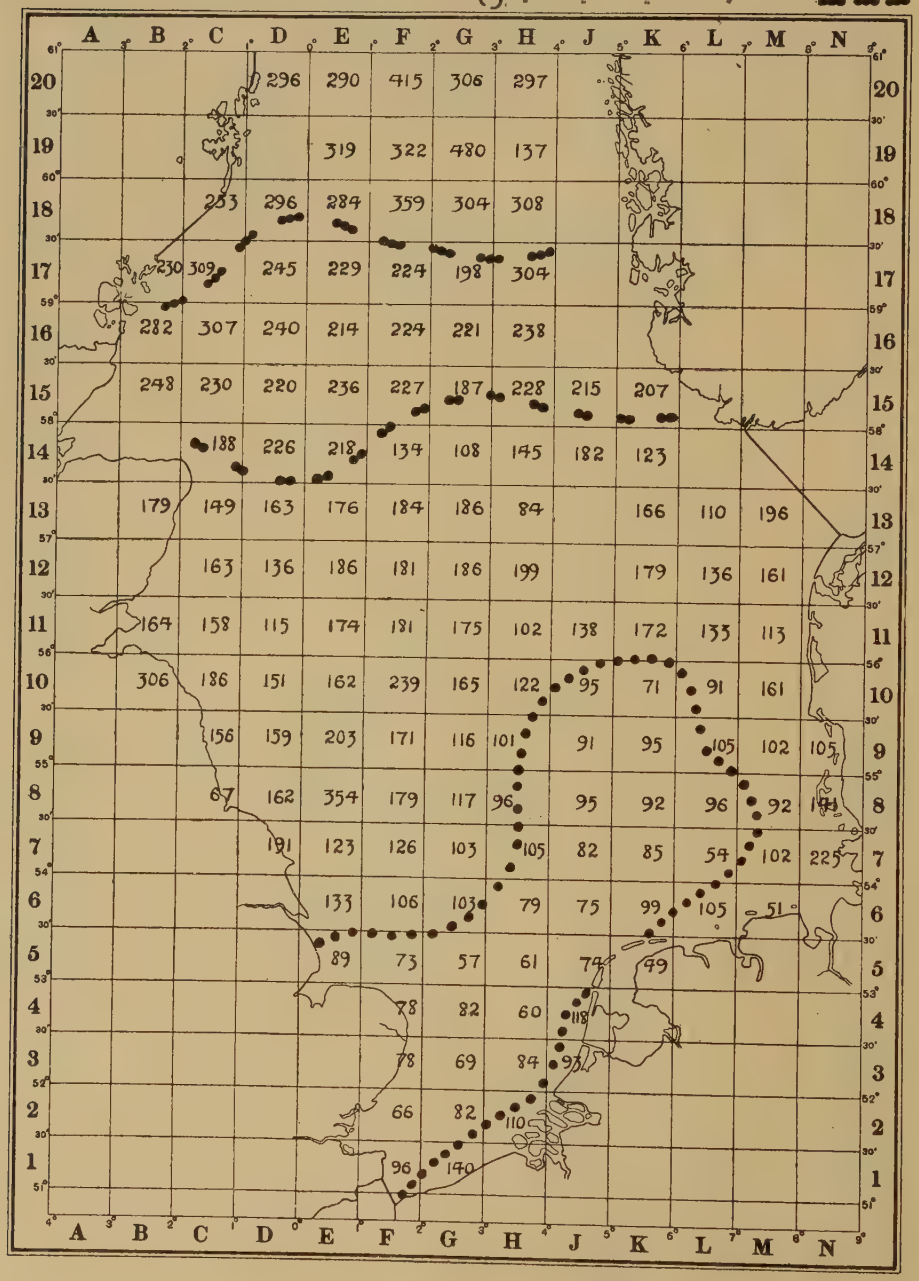


Chart 2. *Catch in cwts. of bottom fish per 100 hours actual fishing by Steam Trawlers in each rectangle of the North Sea in 1920.*

Approximate position of { 1 cwt. per hour's fishing ••••••••
2 " " " " ▬ ▬ ▬ ▬
3 " " " " ▬▬ ▬▬ ▬▬

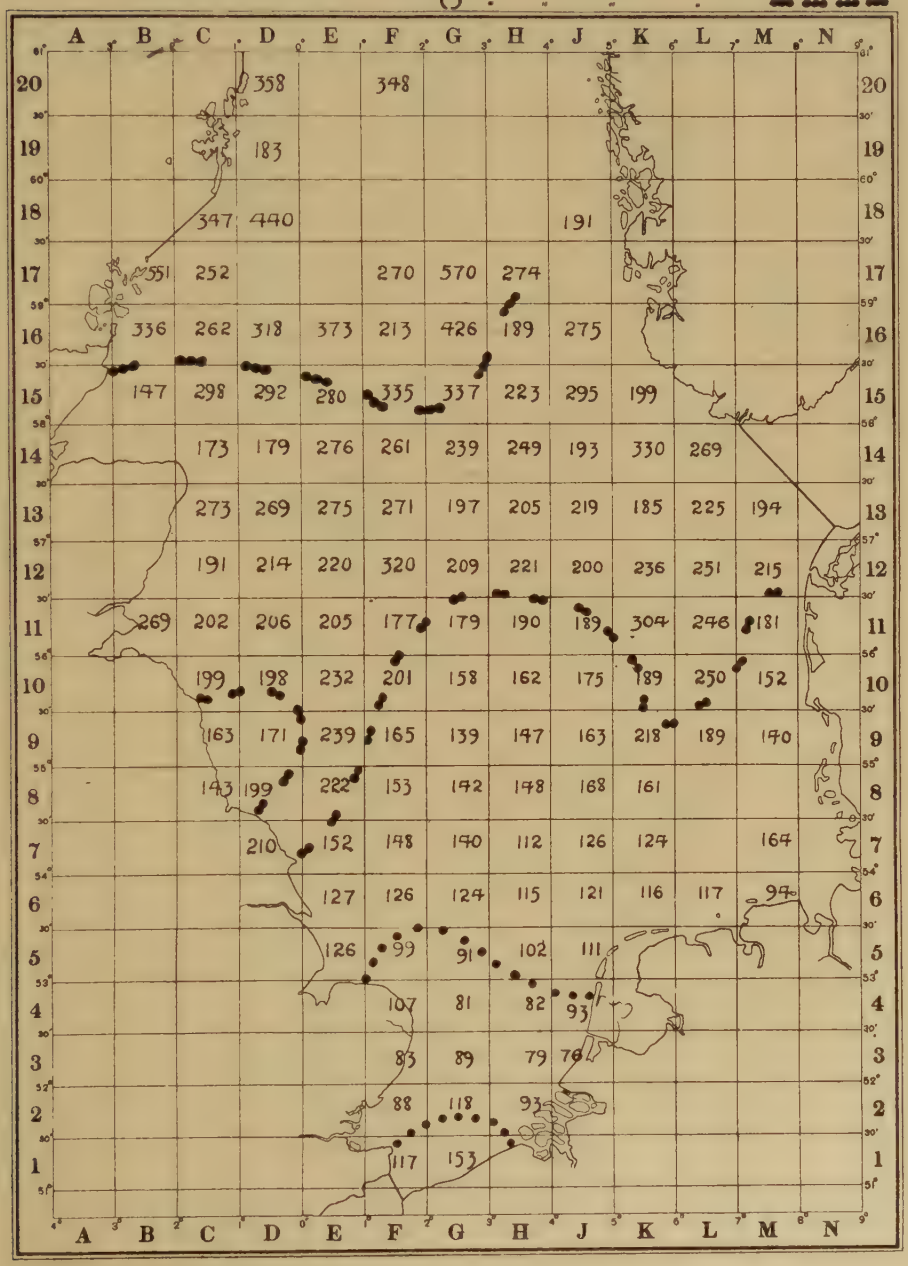


Chart 3. Catch in cwts. of bottom fish per 100 hours actual fishing by Steam Trawlers in each rectangle of the North Sea in 1921.

Approximate position of { 1 cwt. per hour's fishing
2 " " " "
3 " " " "

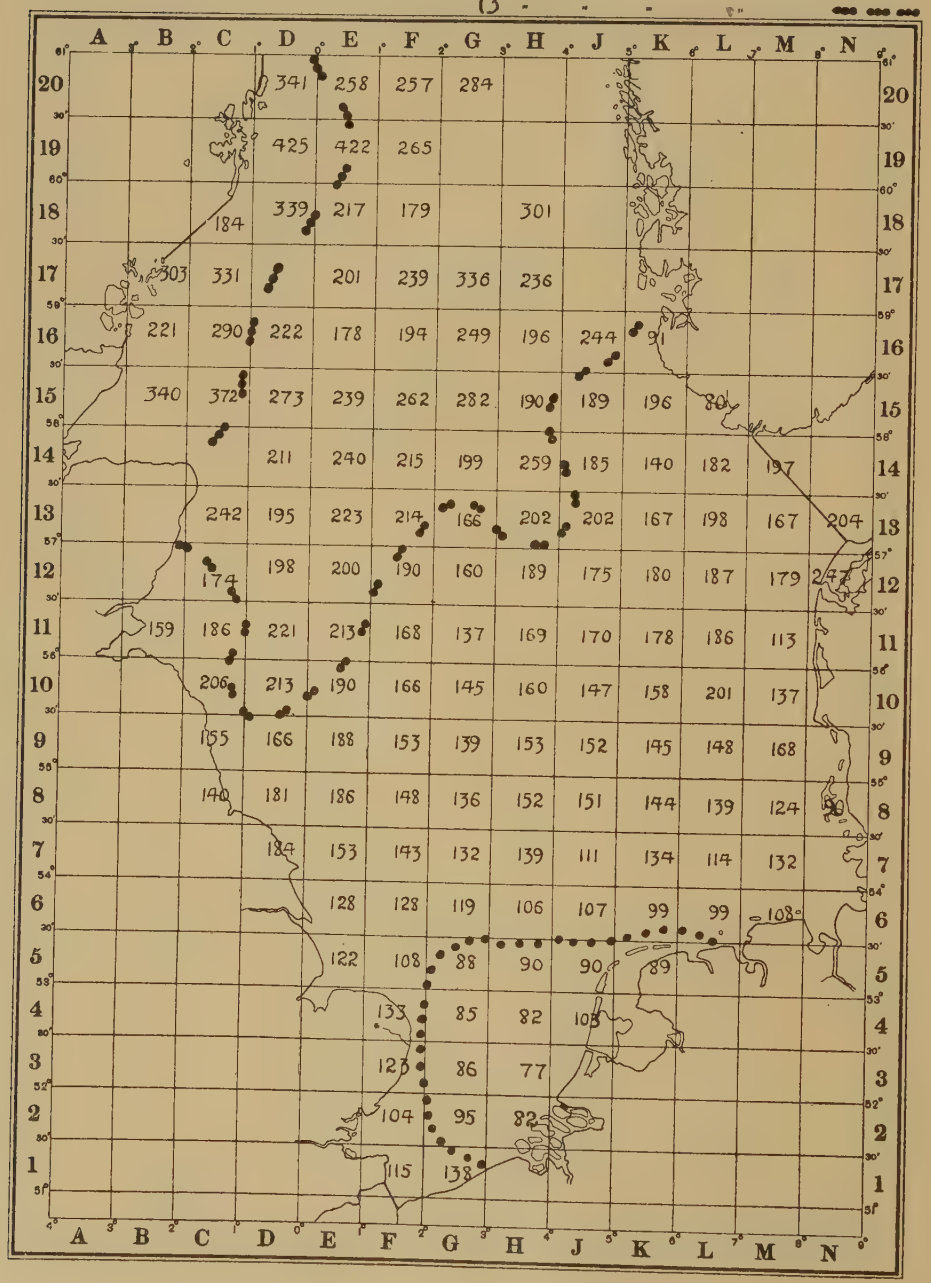


Chart 4. *Catch in cwts. of bottom fish per 100 hours actual fishing by Steam Trawlers in each rectangle of the North Sea in 1922.*

Approximate position of { 1 cwt. per hours fishing ●●●●●●
2 " " " " ▬ ▬ ▬ ▬
3 " " " " ▬▬ ▬▬ ▬▬

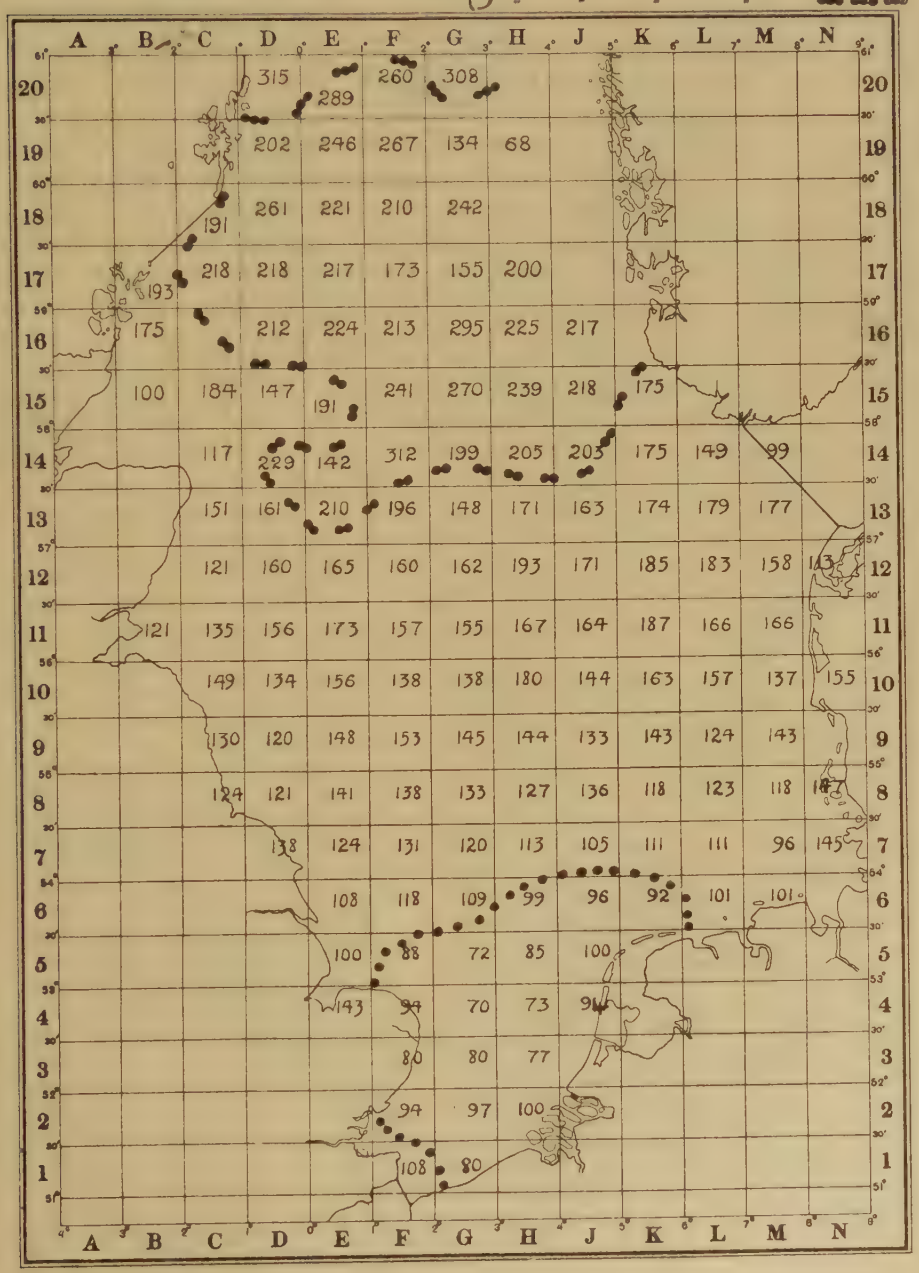
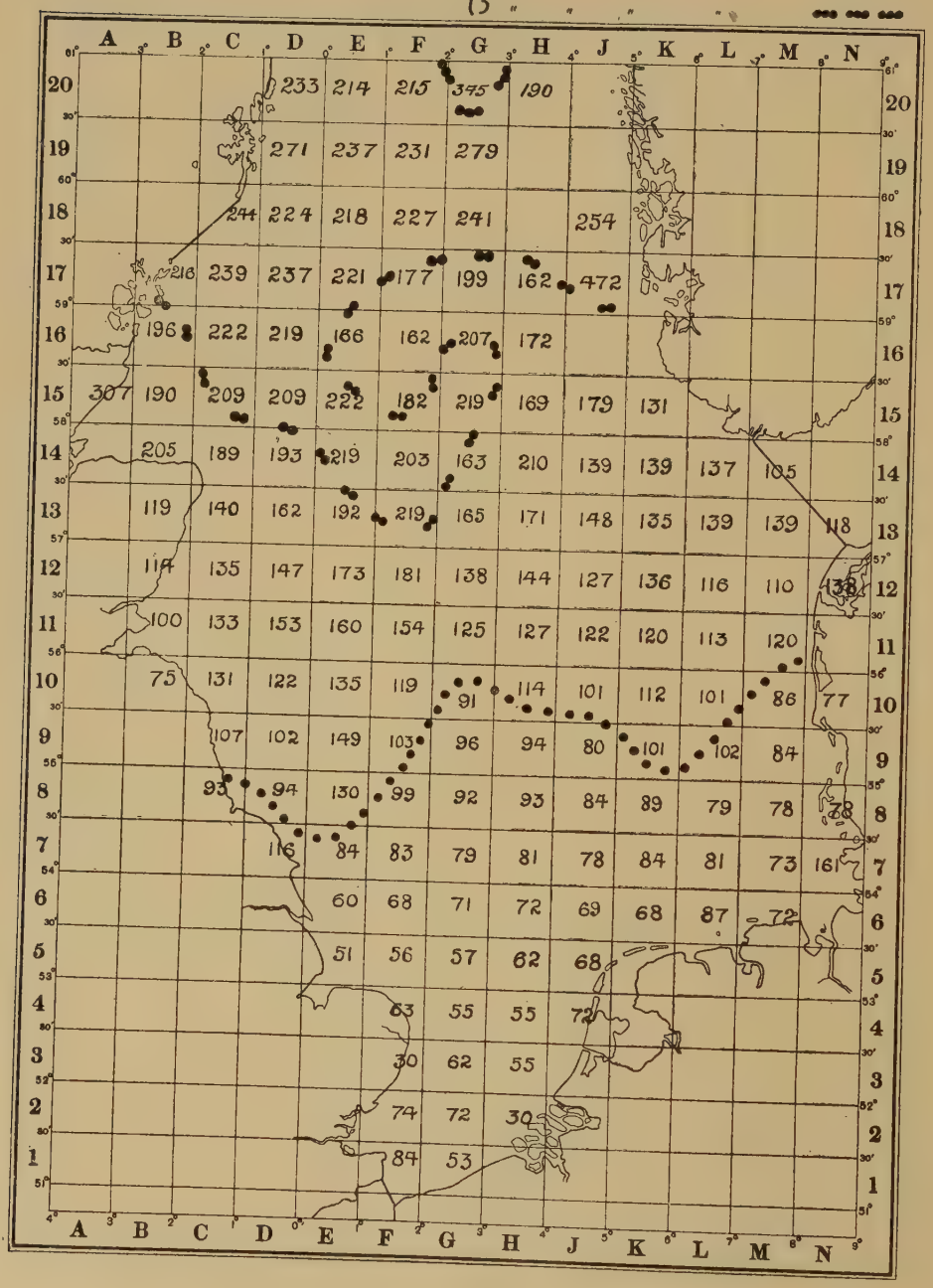


Chart 5. *Catch in cwts. of bottom fish per 100 hours actual fishing by Steam Trawlers in each rectangle of the North Sea in 1923*

Approximate position of { 1 cwt. per hour's fishing ••••••• / 2 " " " " ▬ ▬ ▬ ▬ / 3 " " " " ▬▬ ▬▬ ▬▬



Appendix.

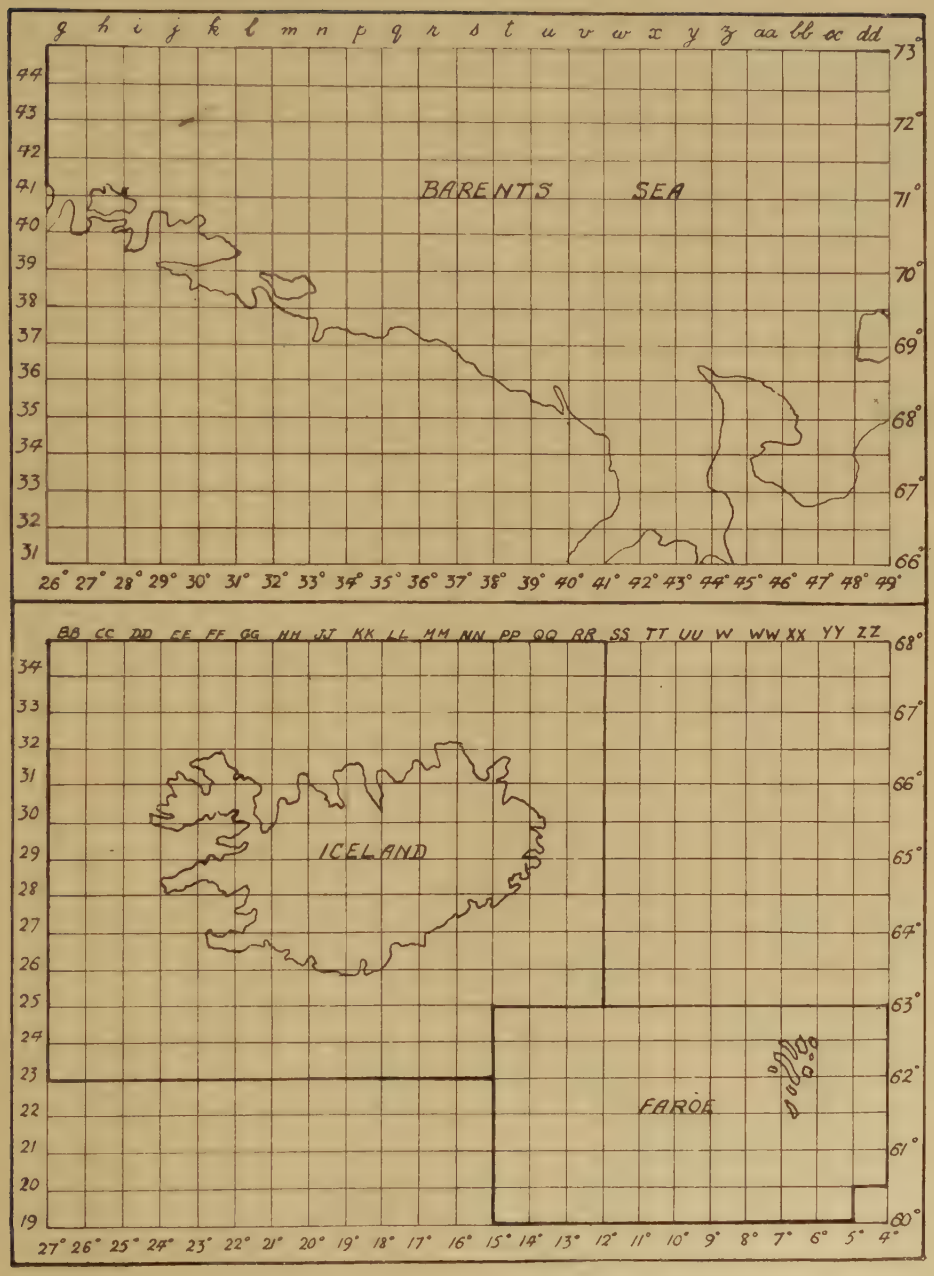
Boundaries of fishing regions.

I. Barents Sea and Murman Coast	East of 26° E.
II. Norwegian Coast	West of 26° E and North of 62° N.
III. Skagerak, Belts and Baltic	East of 8° E from Norway to 57° N. North of 57° N from 8° E to Denmark.
IIIa. Skagerak, Kattegat and Belts	West of 13° E.
IIIb. Baltic	East of 13° E.
IV. North Sea	South of 62° N. East of 4° W. North of 51° N and West of III. Skagerak etc.
IVa. Northern North Sea	North of 57°30′ N.
IVb. Middle — —	Between 53°30′ N and 57°30′ N.
IVc. Southern — —	South of 53°30′ N.
V. Iceland and Faroe	South of 68° N from 27° W to 12° W. East of 27° W from 68° N to 62° N. North of 62° N from 27° W to 15° W. East of 15° W from 62° N to 60° N. North of 60° N from 15° W to 5° W. West of 5° W from 60° N to 60°30′ N. North of 60°30′ N from 5° W to 4° W. West of 4° W from 60°30′ N to 63° N. South of 63° N from 4° W to 12° W. West of 12° W from 63° N to 68° N.
Va. Iceland	West of 15° W from 62° N to 63° N and North of 63° N from 15° W to 12° W.
Vb. Faroe	East of 15° W from 62° N to 63° N and South of 63° N from 15° W to 12° W.
VI. West of Scotland and Rockall	South of 60° N. East of 18° W. North of 54°30′ N to Ireland and of 55° N from Ireland to Scotland. West of 4° W to 60°30′ N. South of 60°30′ N to 5° W and East of 5° W to 60° N.
VIa. West of Scotland	East of 12° W.
VIb. Rockall	West of 12° W.
VII. West of Ireland and Channels	South of 54°30′ N to Ireland and 55° N between Ireland and Scotland. East of 18° W. North of 48° N to IV. North Sea.
VIIa. Irish Sea	North of 52° N from Wales to 7° W. East of 7° W to Ireland.
VIIb. West of Ireland	East of 12° W and North of 52°30′ N.
VIIc. Porcupine Bank	West of 12° W and North of 52°30′ N.
VIId. English Channel East	East of 2° W.
VIIe. — — West	West of 2° W. South of 50° W from 7° W to line drawn South from Lands End, East of 7° W. North of 49°30′ to 5° W, East of 5° W to 48° N, and North of 48° N to France.
VIIf. Bristol Channel	East of 5° W from Welsh Coast to 51° N. South of 51° N from 5° W to 6° W. East of 6° W from 51° N to 50°30′ N. South of 50°30′ from 6° W to 7° W. East of 7° W from 50°30′ N to 50° N. North of 50° N from 7° W to a line drawn South from Lands End.

	VIIg. South East Ireland	South of VIIa Irish Sea. East of 9° W. North of 50° W and West of VIIf Bristol Channel.
	VIIh. Little Sole Bank	South of 50° N. East of 9° W and West of VIIe. English Channel West.
	VIIj. Great Sole Bank	South of 52°30′ N. East of 12° W and West of 9° W.
	VIIk. West of Great Sole Bank	South of 52°30′ N and West of 12° W.
VIII.	Gulf of Biscay	South of 48° N. East of 18° W. North of 43° N.
	VIIIa. South Brittany	South of 48° N. East of 8° W to 47°30′ N. North of 47°30′ N to 6° W. East of 6° W to 47° N. North of 47° N to 5° W. East of 5° W to 46° N. North of 46° N to France.
	VIIIb. French Biscay	South of 46° N from 4° W. East of 4° W to 45°30′ N. North of 45°30′ N to 3° W. East of 3° W to 44°30′ N. North of 44°30′ N to 2° W. East of 2° W.
	VIIIc. Spanish Biscay	South of 44°30′ N. East of 11° W. West of 2° W.
	VIIId. Biscay Deepwater	East of 11° W. West of VIIIa. (South Brittany) and VIIIb. (French Biscay) to 44°30′ N. North of 44°30′ N.
	VIIIe. West of Biscay	West of 11° W.
IX.	Portuguese Coast	South of 43° N. East of 18° W and North of 36° N. West of 6° W.
	IXa. Coast of Portugal	East of 11° W.
	IXb. West of Portuguese Coast	West of 11° W.
X.	Morocco and Madeira	South of 36° N. East of 20° W. North of 30° N. West of 6° W.
	Xa. Moroccan Coast	East of 11° W.
	Xb. Madeira	West of 11° W.
XI.	Mauretania	South of 30′ N. East of 20° W. North of 18° N.
	XIa. Canary Islands	North of 26° N.
	XIb. Mauretanian Coast	South of 26° N.
XII.	Senegal and Guinea	South of 18° N. East of 20° W. North of Equator.
	XIIa. Coast of Senegal	North of 10° N.
	XIIb. Guinea	South of 10° N.
XIII.	Mediterranean	East of 6° W.
XIV.	Newfoundland Bank.	

These boundaries are indicated by thick lines on the following diagrammatic charts which also show the statistical rectangles with their reference letters at the top, and their numbers at the left hand margins.

Regions I & V.


g h i j k l m n p q r s t u v w x y z aa bb cc dd
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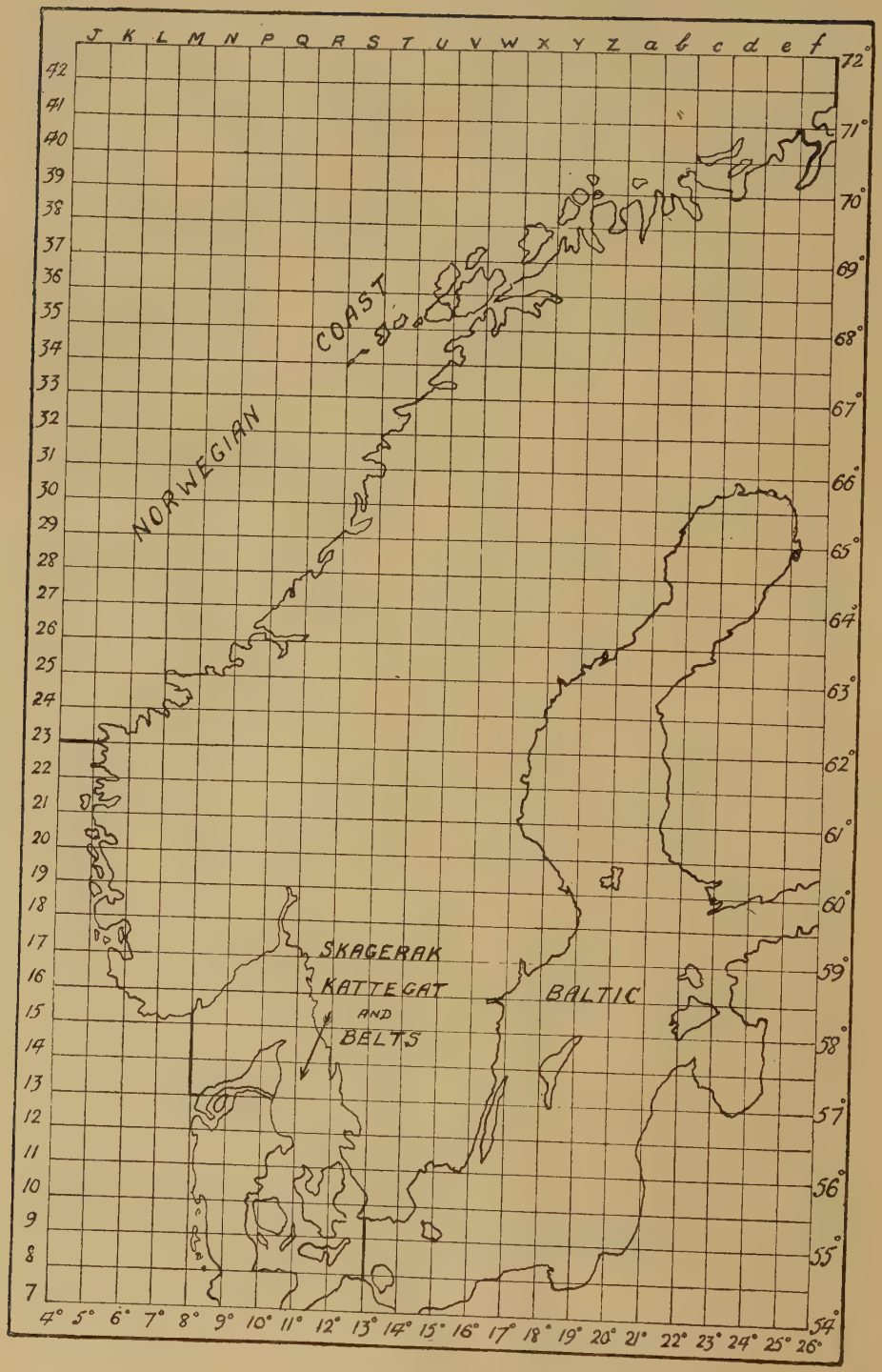
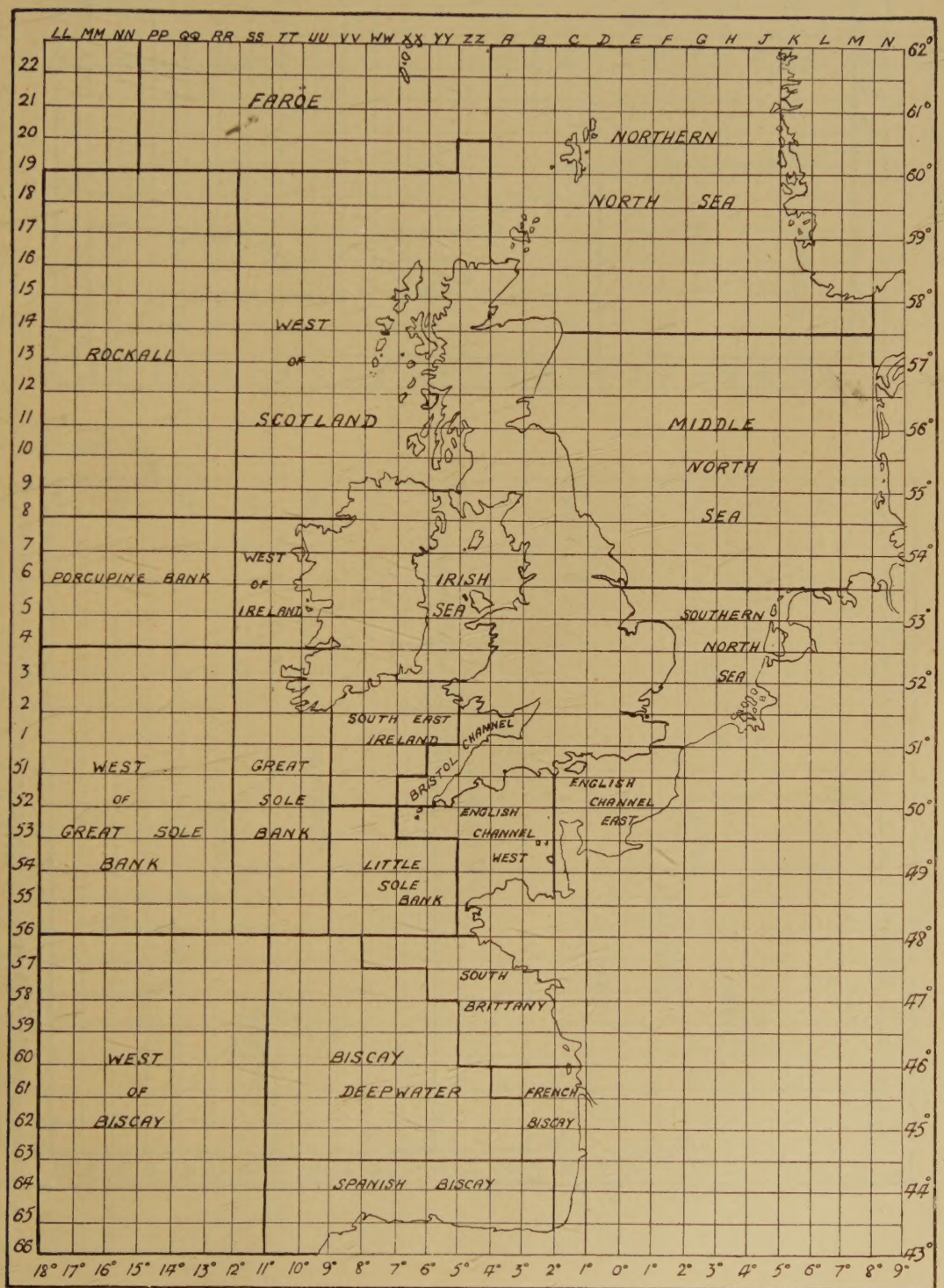
Regions II & III.



Regions IV, VI, VII & VIII.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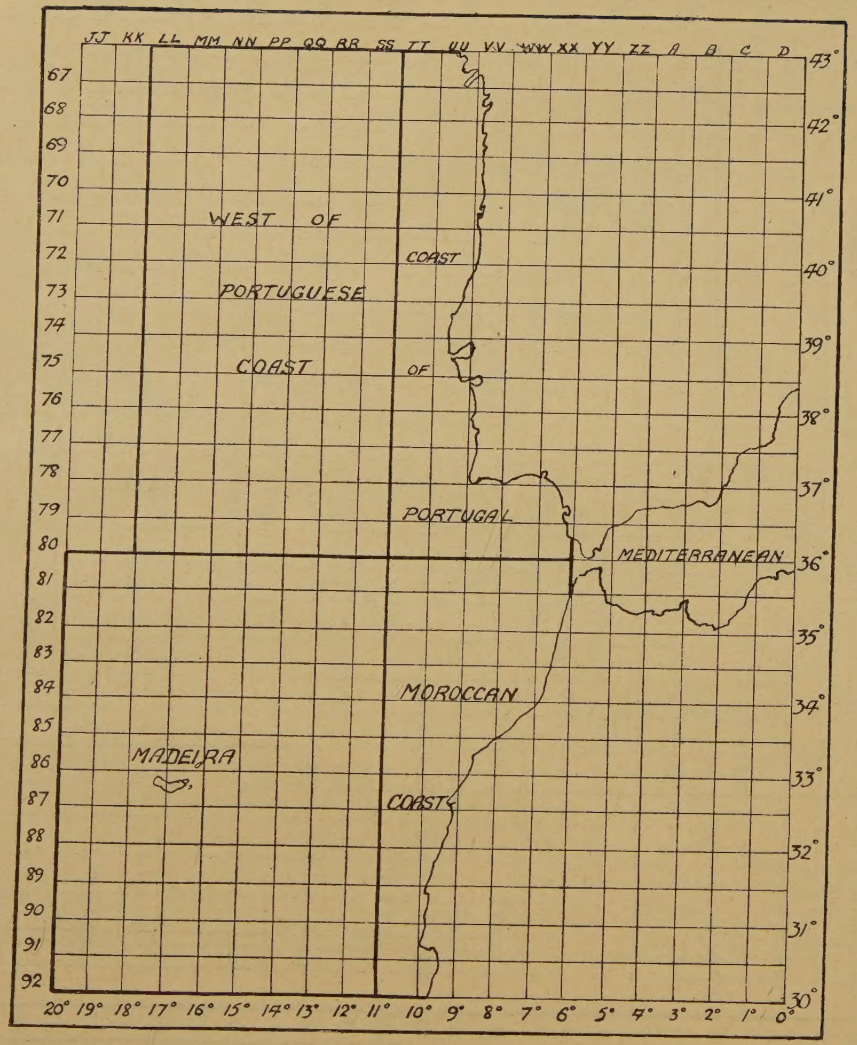
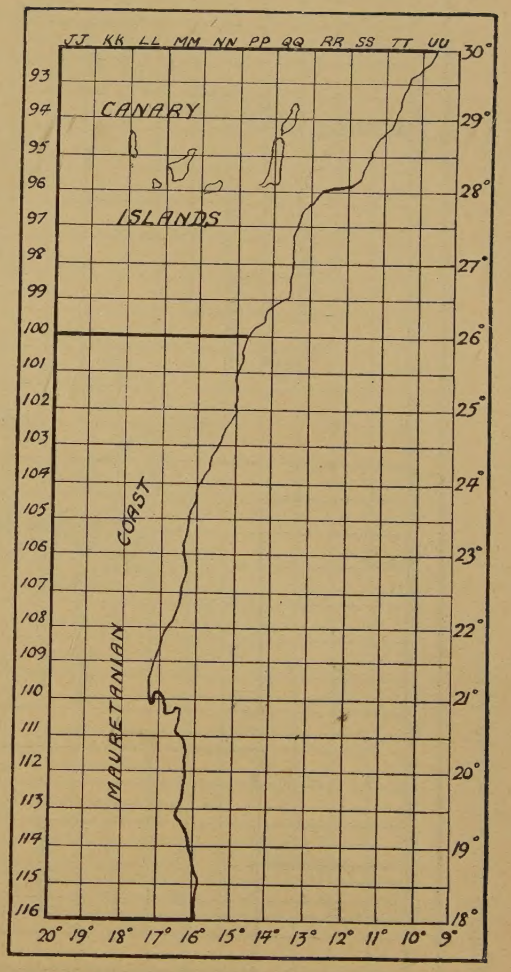
FAROE
NORTHERN
NORTH SEA
ROCKALL
WEST OF SCOTLAND
MIDDLE NORTH SEA
PORCUPINE BANK
WEST OF IRELAND
IRISH SEA
SOUTHERN NORTH SEA
SOUTH EAST IRELAND
BRISTOL CHANNEL
WEST OF GREAT SOLE BANK
GREAT SOLE BANK
ENGLISH CHANNEL EAST
ENGLISH CHANNEL WEST
LITTLE SOLE BANK
SOUTH BRITTANY
WEST OF BISCAY
BISCAY DEEPWATER
FRENCH BISCAY
SPANISH BISCAY

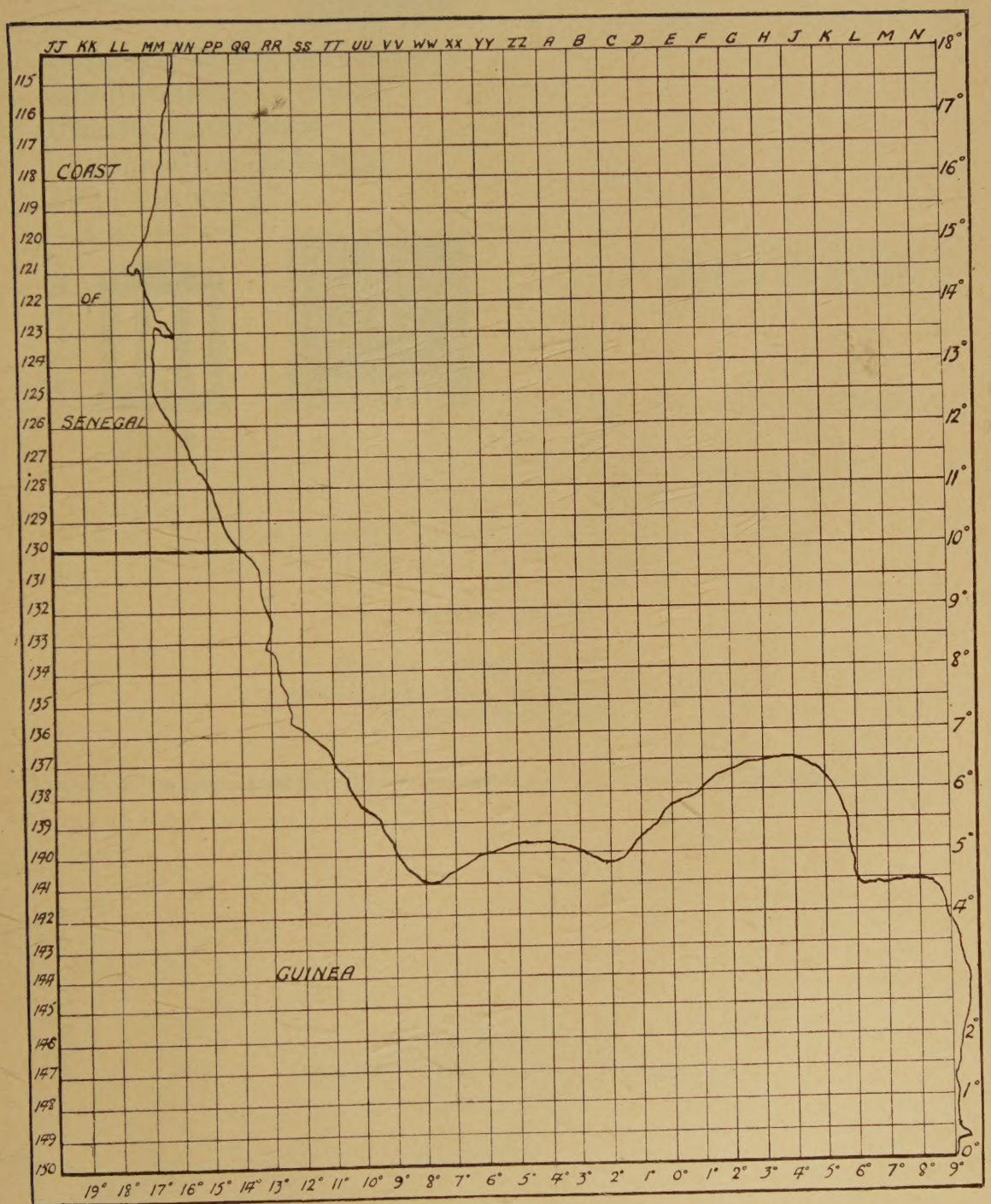
Regions IX & X.



Region XI.



Region XII.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COAST
OF
SENEGAL
GUINEA